Life Cycle Approaches to advance Sustainable Regional Development (including bio-economy)

Presented by:

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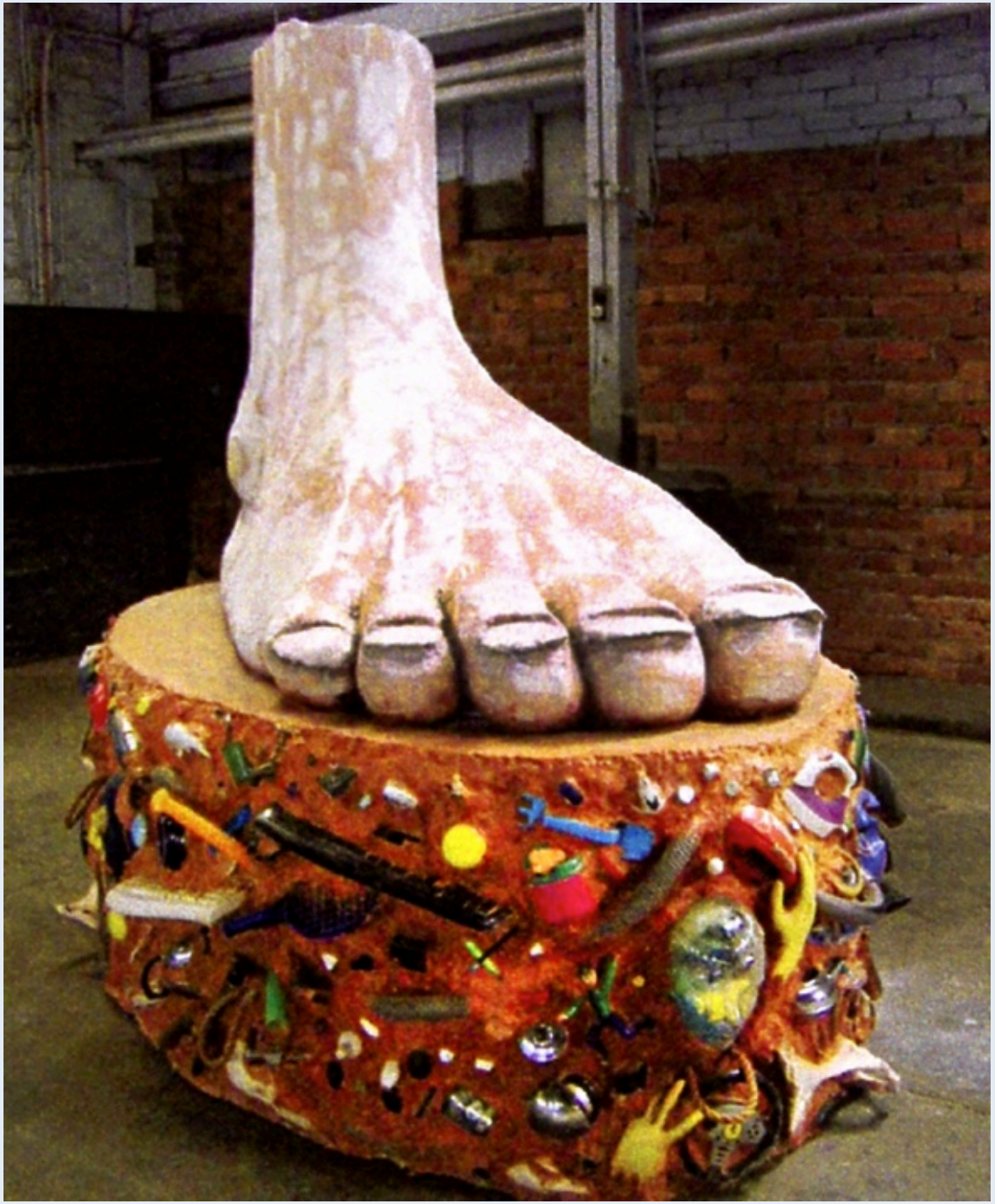
Sustainable solutions

Purpose of the Presentation

- Recall the importance of regions in sustainable development
- Recall the role of life cycle approaches in addressing sustainability programmes and policies
- Comment on the maturity of life cycle instruments and tools for the above purpose

A sculptor's interpretation of the environmental

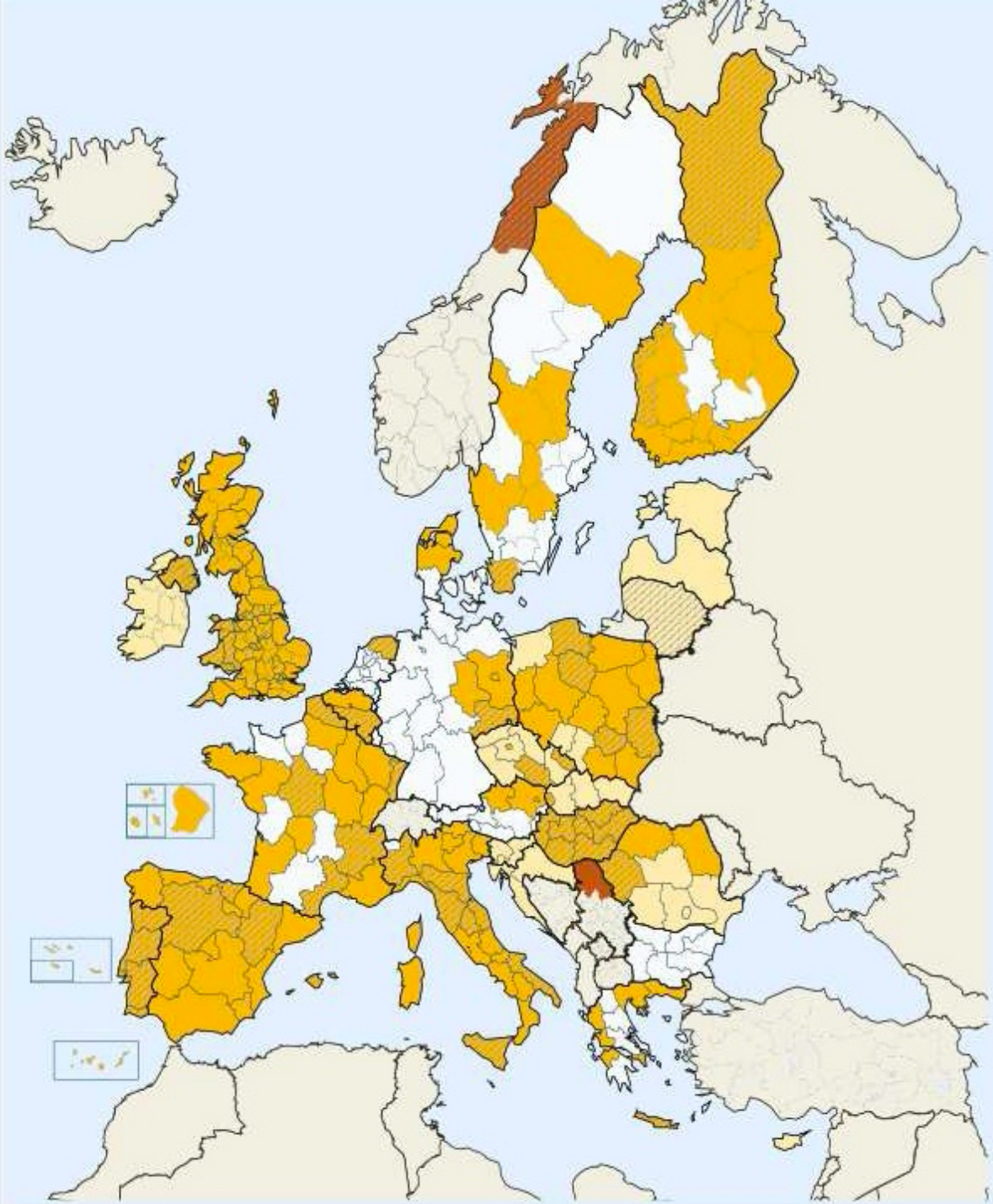
footprint



Introduction

Some important background considerations

Numerous regions in Europe



The significance of regions

Regions are an underestimated force in national and international development.

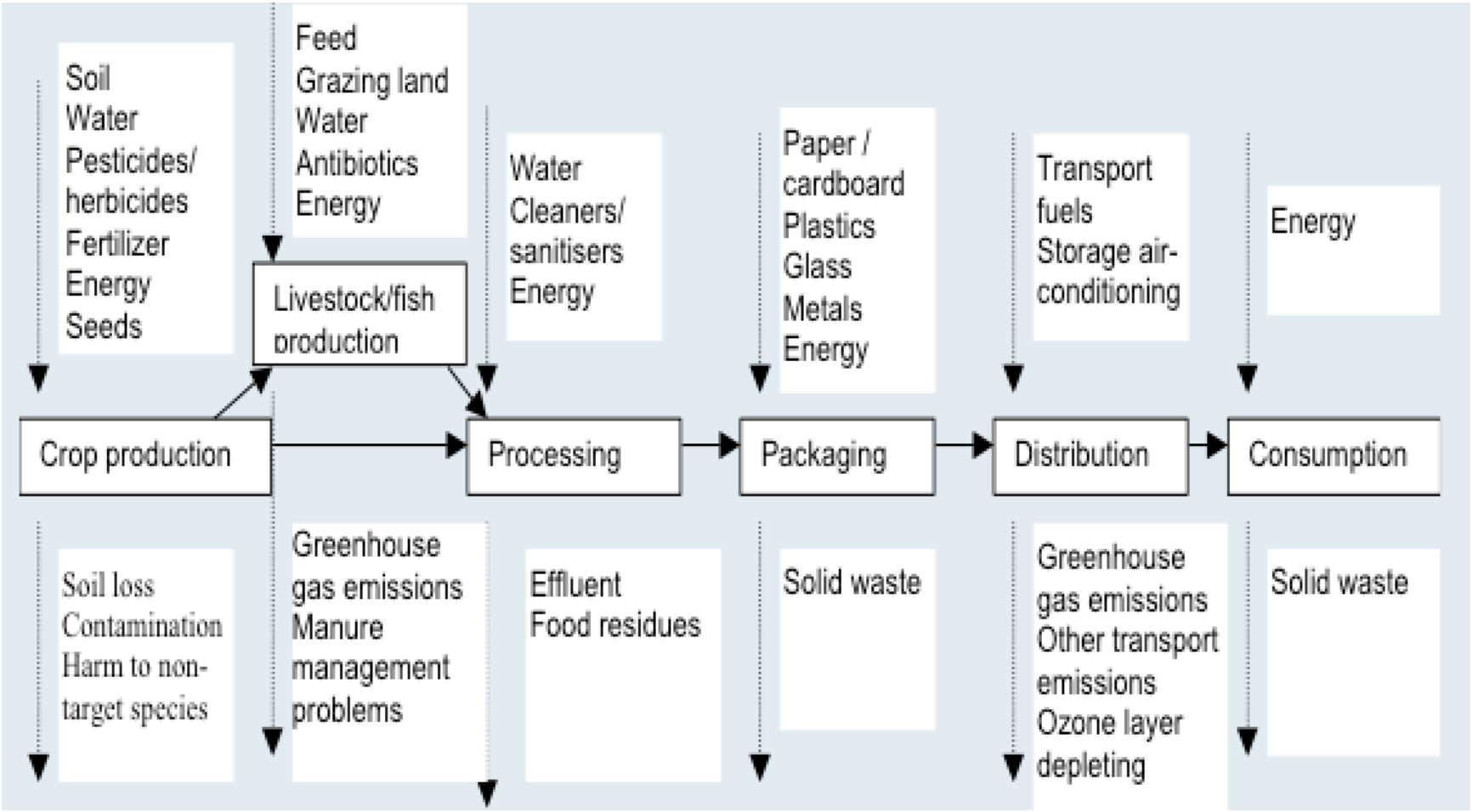
Consider that:

- Most countries have regions (Provinces, States, Länder, etc.)
- Regions have growing independence, responsibilities & budgets
- Many regions have more coherent sustainability initiatives than their national governments!
- Regions are strongly promoting long-term development plans
- Many regions implement national legislation

- Regions are embedded in global supply chains
- Regions are major purchasers of goods and services
- Many regions formulate and promote locally branded products
- Regions are responsible for waste and pollution management

What is sustainability ?
Which SD goals to adopt ?

Where are the origins of the impacts ? Importance of considering the supply chain



Sustainability ‘add-on’

It’s been difficult to integrate sustainability concepts into traditional development programmes.

Some examples of ‘add-on sustainability’ have been:

- Sustainable agriculture – organic crops
- Sustainable industry – cleaner production
- Sustainable transport – bjo-fuels
- Sustainable building - insulation
- Sustainable energy – renewable energy
- Sustainable resource management – site rehabilitation
- Sustainable waste management – recycling, CE
- Sustainable tourism – adventure packages

These are part of a solution, but not THE solution.

On their own, they do not constitute a systems approach

Hopeful signs

Despite the inherent difficulties, some regions are moving ahead. They are pursuing development packages, grouping a number of policy issues together, as for example:

- Sustainable public procurement
- Materials flows and Circular Economy
- Industrial ecology, industrial synergies
- Sustainable industries, resource management and agriculture

Best results occur when they are based on satisfying all the major sustainability objectives relevant to key regional preoccupations, respecting also impacts along global supply chains

At present, a more systematic application of life cycle tools would improve the effectiveness of such initiatives in achieving sustainability objectives

Methodology recall

- the structural basis of life cycle approaches

A structured LCM framework

A structured life cycle approach to sustainable regional development can be based on:

- assessment tools
- action areas
- implementation frameworks
- management approaches – LCM

Some assessment instruments

Assessment tools include:

- LCA – product/material focus.
- LCA Derivatives – LCC, SLCA, O-LCA, etc.
- Materials flows – MFA, I/O, LCC, waste audits
- SD assessment – footprints, EIA, LCSA
- Risk assessment, health & safety
- Resource assessment – NRA
- Landscape assessment

- These can focus on materials, society, resources, economics, organisational structure ….

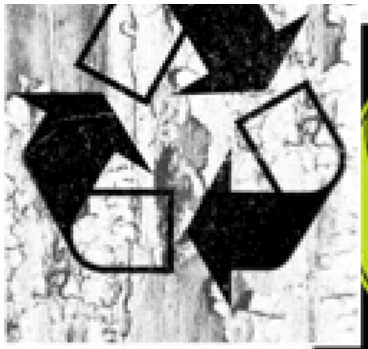
- Some prominent assessment 'gaps' – biodiversity, culture, equality,..

Moving from assessment to action

Some action areas based on LCA:

- Eco design, PSS
- Eco-labels, EPD
- Dematerialisation
- Recyclability, renewability
- Resource efficiency
- Restrictions on use
- Sustainable consumption
- Cost reduction

Eco-labels for sustainable purchasing



FAIRTRADE

THE GOOD SHOPPING GUIDE

ethical PRODUCT

eb

EthicalBuying

Where it doesn't cost the earth

RAINFOREST ALLIANCE CERTIFIED EST 1987

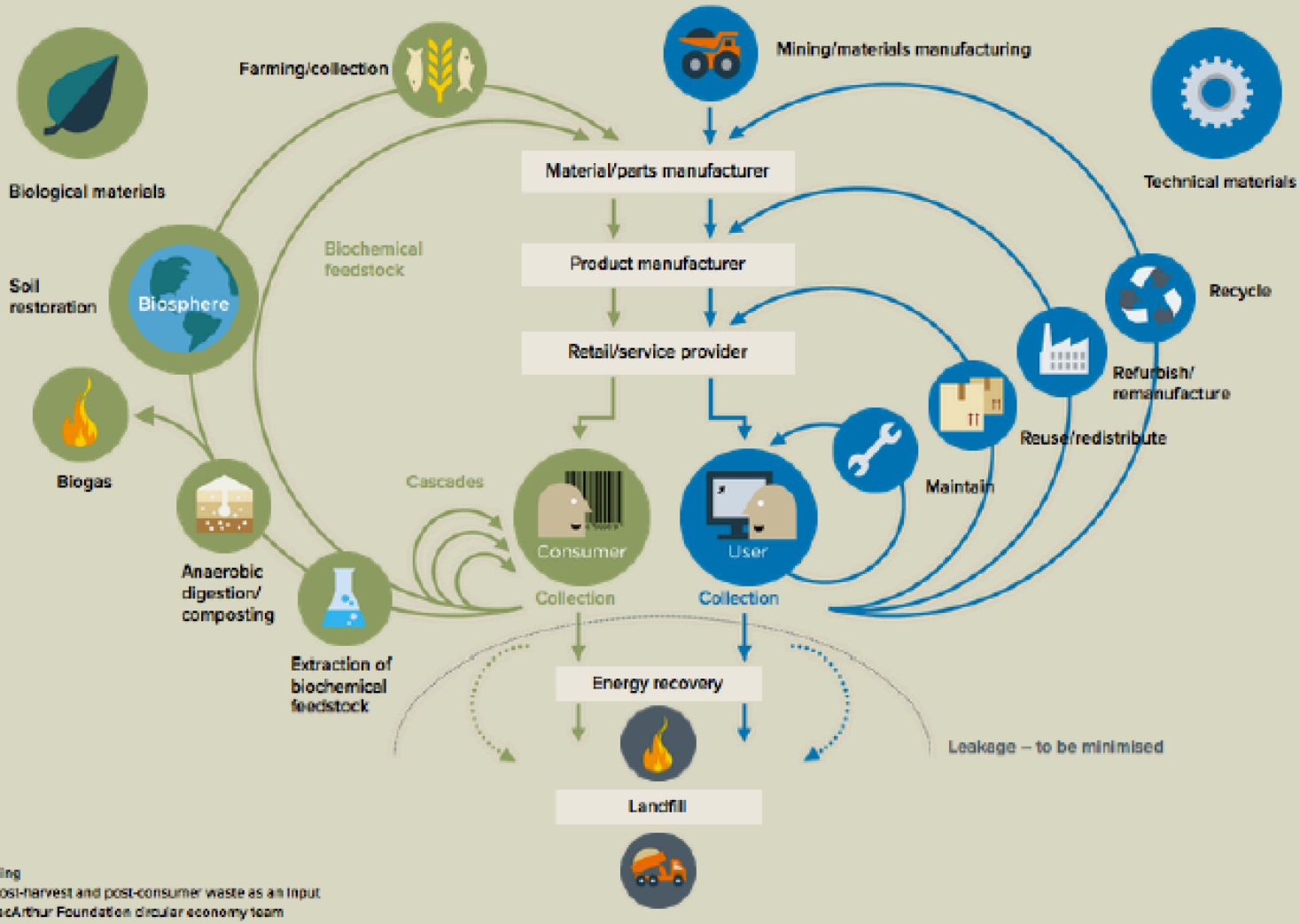
Implementation frameworks for the action elements

All action takes place in a particular context.

Life cycle thinking is embedded in many **implementation frameworks** such as:

- holistic concepts – *Limits to Growth, The Natural Step, Cradle to Cradle*
- sustainable society concepts – *industrial ecology, dematerialisation, resource efficiency, cleaner production, circular economy, materials optimisation*
- supply chains and value chains, life cycles
- limit values for products and processes

THE CIRCULAR ECONOMY AN INDUSTRIAL SYSTEM THAT IS RESTORATIVE BY DESIGN



1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input
SOURCE: Ellen MacArthur Foundation circular economy team

Life Cycle Management systems

Life Cycle Management operates through a life cycle ‘tool box’. Some examples of management systems that rely on life cycle considerations are:

- SSCM, SPP
- EPR
- PSS
- Risk (and health) management systems
- Chemicals management systems

Regional functions
and
life cycle thinking

What do regions actually do ?

Some examples of **regional functions** where life cycle thinking could be valuable include:

- Purchasing, procurement, tendering, recruitment
- Improving resource efficiency, materials optimisation
- Pollution and waste management
- Infrastructure planning and development
- Land management and land restoration - Protected areas.
- Addressing energy and climate change
- Overseeing construction and building development
- Transport development and operation
- Fostering industrial development, incl. tourism and agriculture
- Advancing social development and public health

Common sustainability initiatives in regions

- circular economy
- industrial ecology in business clusters
- renewable energy
- environmental/sustainability footprints
- resource efficiency and cleaner production
- sustainable transport
- green technology/green industry
- sustainable buildings

Question: Which life cycle tools could be useful in implementing each of the above ?

Some significant action clusters

- Circular economy and materials flows
- Promoting/supporting local industries
- Resource management and conservation
- Social cohesion and cultural identity
- Environment and health

Action types

- Planning policy
- Regulations and standards
- Subsidies and incentives
- Shaping own operations; direct intervention
- Supporting R&D and pilot projects
- Training and education

Some examples of sustainability initiatives by regions

Redefining Sustainability as GNH

Analysis– mapping regional materials flows

In order to manage its waste flows more systematically, the city of Brussels has mapped the materials flows in its region:

Coming in - 7 m tonnes pa

Going out – 5 m tonnes pa

Where is the 2m tonnes pa that remains in the region?

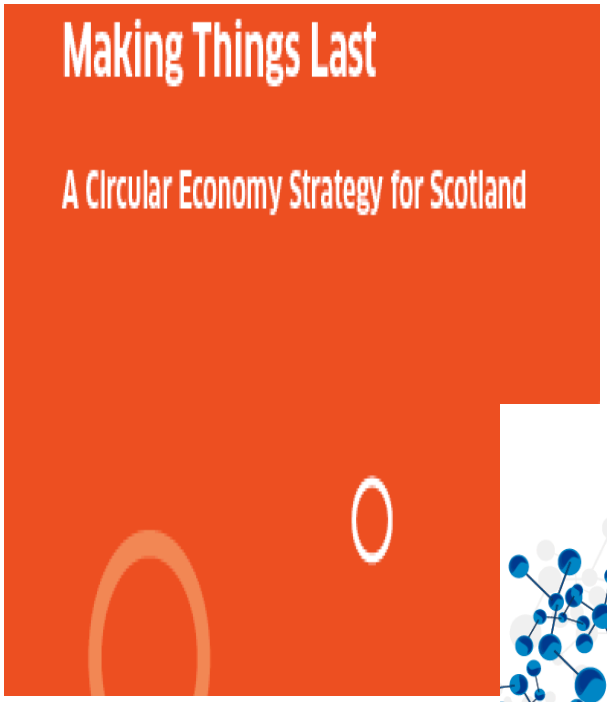
Sustainable Public Procurement

Governments should seek value for money across the asset life cycle rather than simply at the point of purchase. Sustainability should be included among the purchasing criteria

Commodity focus is common – India, US
Sometimes legal obligation – Nova Scotia
Policy objectives – Mexico, South Africa, Abu Dhabi

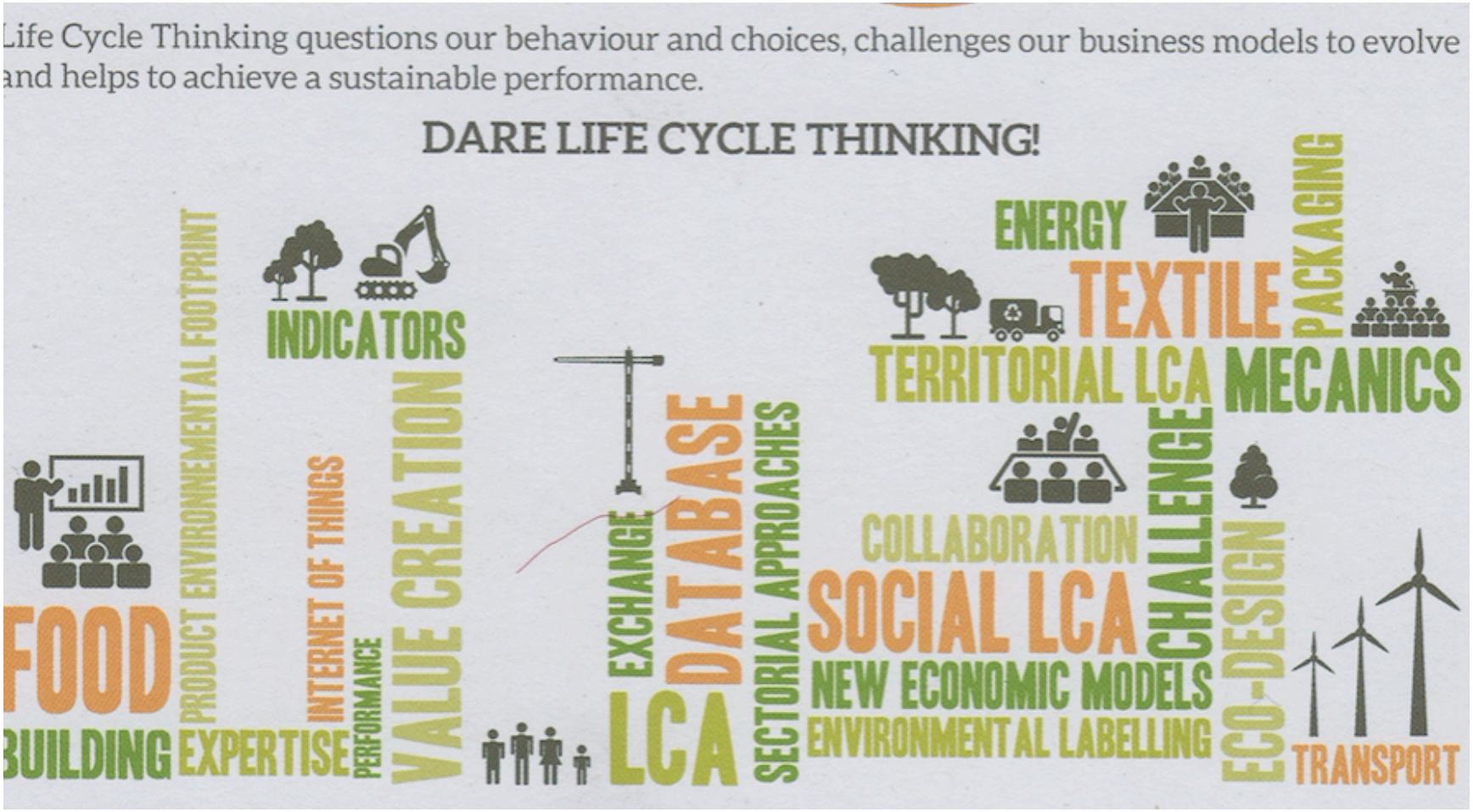
Special case of Public-Private Partnerships and tendering

3 Regional Circular Economy programmes



The Flanders' Materials Programme

Sustainable industrial development I



Sustainable industrial development II

Study for State of South Australia

- Old industries disappeared
- Mapping of energy and materials flows
- Propose a new basis for future industrial system
- Energy independence
- Alternative approaches not necessarily accepted by current industries
- Changes are difficult politically (winners & losers)

Sustainable industrial development III

Wood as basis of new industrial future

- Traditional approach – cut and sell it (still common)
- French approach – lumber, fibre and energy
- Walloon – lumber and energy
- Germany – multiple industrial products

In addition to economics, it's important to consider materials flow, environment and social factors across the entire life cycle

Regional partnerships on LCM

Life cycle initiatives are not only relevant as a direct action within regional administrations. Regions can also take important outreach and support measures to help local businesses to adjust to fast-changing situations through a life cycle approach.

Ref example

LCM - in the region Hauts de France. www.avnir.org

MFA&CP – in Baden Wurttemberg

Thematic sustainable industry clusters in regions

Good Practice Case 1

CLUSTERING GREEN COMPANIES

THE SUCCESS OF AUSTRIA'S GREENTECH VALLEY

LOCATION
Austria/Styria

FUNDING SOURCE
Federal State of Styria, ERDF, Private Investment

Austria hosts one of the world's leading green technology clusters - Eco World Styria. Styria has had a large concentration of environmental companies that dates back to the 1970s. Then in 1998, the local business support agency established a loose network and a web platform to promote green technology projects. By 2005, the loose network had evolved into a **well-founded cluster** and currently, around 200 companies and research centres are actively working in the cluster on the environmental engineering solutions of tomorrow.

Eco World Styria focuses on a research-industry-government cooperation model to take eco-innovation to a higher level. The cluster offers its companies an attractive range of services, including **market strategy support, innovation potential evaluation, R&D partner identification, funding services and investor search.** Eco World Styria and its strategic partners can secure sustainable growth for the cluster clients through the entire value chain in the areas of biomass, solar energy, material flow management and waste and water.

"Support for research and innovation, the availability of skilled labour and mechanisms to encourage export will shape the future growth of clean technologies"
Bernhard Pullinger
Eco World Styria Director

The total budget of the cluster development project during 2007 – 2012 amounted to €868,800. Half of this funding came from the ERDF. The success of the cluster has helped to raise significantly the level of self-financing, which currently amounts to around 40%. This includes the cluster membership fees and revenue from projects and services.

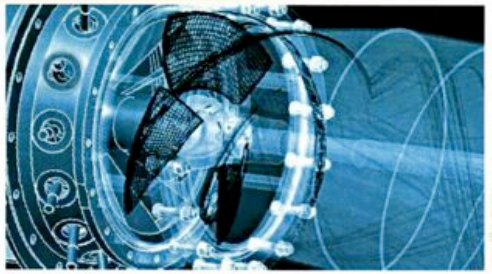
Thanks to this support, **Styrian companies are becoming world market leaders in environmental technologies.** There are 170 companies with an average growth rate of 19% per year, which is nearly double the worldwide average in the cleantech market. In addition, **the cluster has already helped to create 5000 new jobs to grow the local economy.**

KEY MESSAGE
Targeted efforts to support the clustering of innovative cleantech companies can make the region/country a market leader in environmental technologies and services.

For further information please see:
http://www.eco.at/

THE BALTIC ECO-ENERGY CLUSTER

A GREEN ALTERNATIVE FOR NORTHERN POLAND



LOCATION
Poland/Pomorskie and Warmińsko-Mazurskie

FUNDING SOURCE
Regional Funding, ERDF, Private Investment

The Baltic Eco-Energy Cluster (BEEC) was established in 2007 to **better use the largest resource of sustainable energy in Poland and exploit the regional science and technology potential.** Geographically, BEEC's activities cover the area of Northern Poland from Koszalin through Pomorskie Voivodeship to the eastern confines of Warmińsko-Mazurskie Voivodeship. It associates almost 50 partners from academia and local government bodies, as well as businesses that are based in these administrative provinces.

The main mission of the BEEC is to introduce and promote **distributed co-generation**. This is the simultaneous small and medium scale production of thermal energy and electricity from renewable energy sources such as biomass and also from converting water, solar and wind energy. The cluster participants jointly implement the projects that involve the establishing of new agro-energy complexes, which are small and medium-scale co-generation power plants, in the macro-region. They work together to develop the research infrastructure, including the provision of modern laboratories, training and demonstration centres. The BEEC's activities are supported by EU structural funds. The cluster also coordinates the collaboration with other Baltic countries on sustainable energy research and development.

The main effects of the cluster's activities have been a **significant increase in the use of renewable energy sources** in northern Poland, the development of **biomass recycling technology from communal** and **industrial waste and the reduction of biological pollution** in rural areas. Besides developing new technologies, the BEEC is also improving the competitiveness of the enterprises in northern Poland.

KEY MESSAGE
Cluster development focused on sustainable energy can help authorities to meet the energy needs of their residents in an environmentally friendly way. It can also foster research activities, improve the competitiveness of regional enterprises and increase employment and tax incomes.

For further information please see:
- http://www.imp.gda.pl/en/beec/
- http://www.imp.gda.pl/

Some common weaknesses

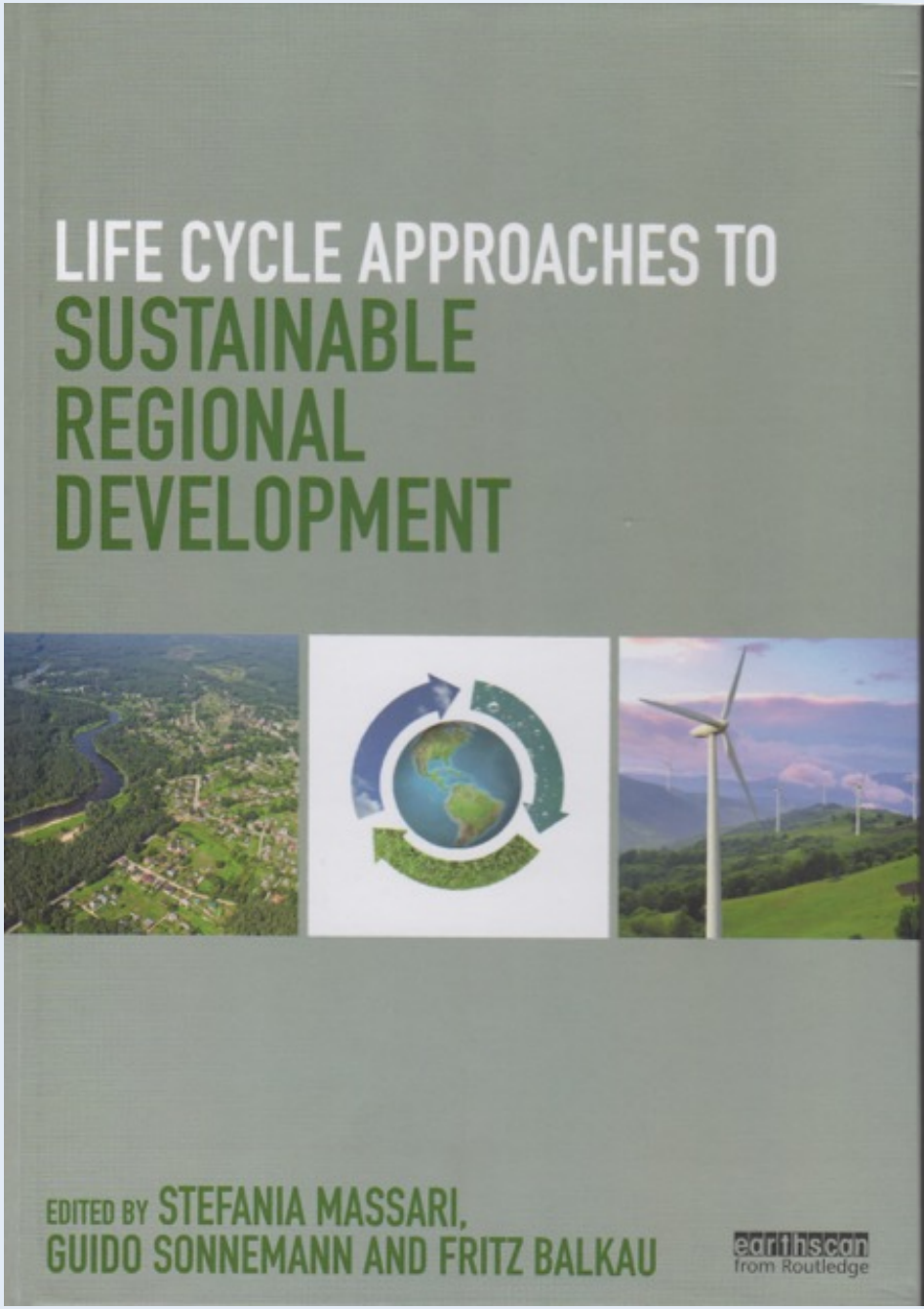
Such initiatives are signs of progress. But …

- Limited sustainability objectives (‘cherry picking’)
- Short or otherwise incomplete supply chains
- Consumption side elements not factored in
- Life cycle tools of limited sustainability scope
- Ignoring cross-media effects
- Non-standardised LCM frameworks and models

Central question

Which life cycle tools,
and what framework for LCM,
can best help implement
regional objectives on sustainability ?

A look into
a new book



Life Cycle Approaches to Sustainable Regional Development explains the ways life cycle methodologies and tools can be used to strengthen regional socio-economic planning and development in a more sustainable manner. The book advocates the adoption of systematic and long-term criteria for development decision-making, taking into account the full life cycle of materials and projects. It describes life cycle practices from both a scientific and a practitioner point of view, highlighting examples and case studies at regional level.

TABLE OF CONTENTS:

Some conclusions from the book

1. Need for clear (sustainability) objectives
2. Life cycle applications are still evolving. Many life cycle tools are mature; some need further adaptation
3. Assessment should be followed by intervention action
4. Mainstreaming of the intervention phase is important
5. Insufficient connection between life cycle practitioners and regional administrators
6. Build on existing experience, share results

But always remember Machiavelli

There is nothing more difficult to take in hand, more perilous to conduct or more uncertain in its success, than to take the lead in the introduction of a new order of things.

For he who innovates will have as his enemies all who are well-off under the existing order of things, and only lukewarm support from those who may be better off under the new.

Thank you

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